

# San Juan Basin Groundwater Modeling

Model Advisory Committee Meeting

June 19, 2012



## Overview

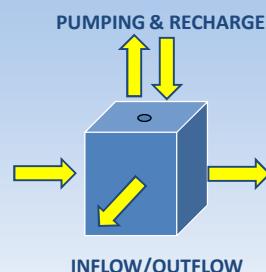
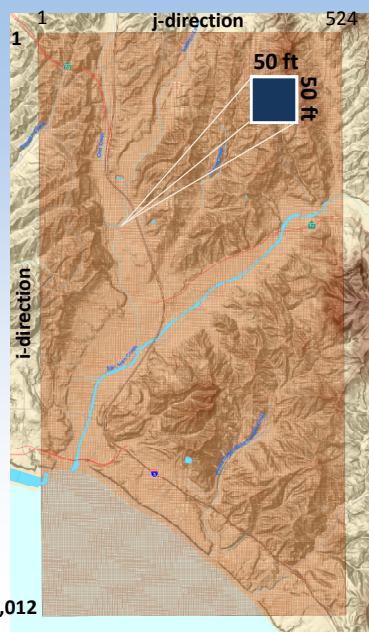
- Groundwater Model Development and Construction
- Groundwater Model Calibration (Run 1)
- Assumptions Used for Maximum Local Yield Run (Run 2)
- Updated Groundwater Modeling Schedule



## Overview

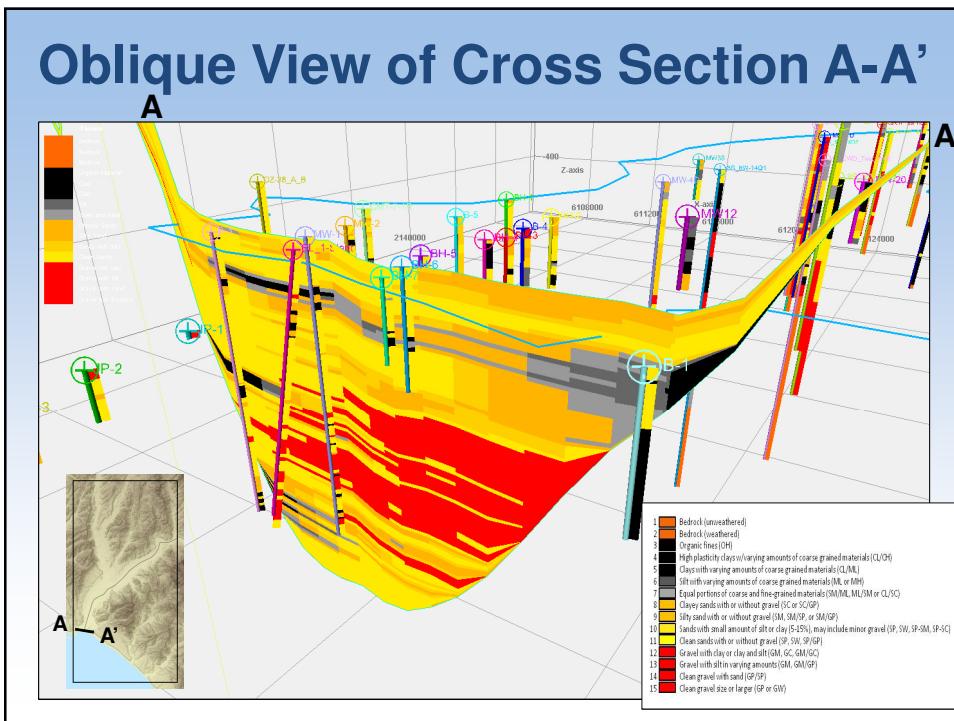
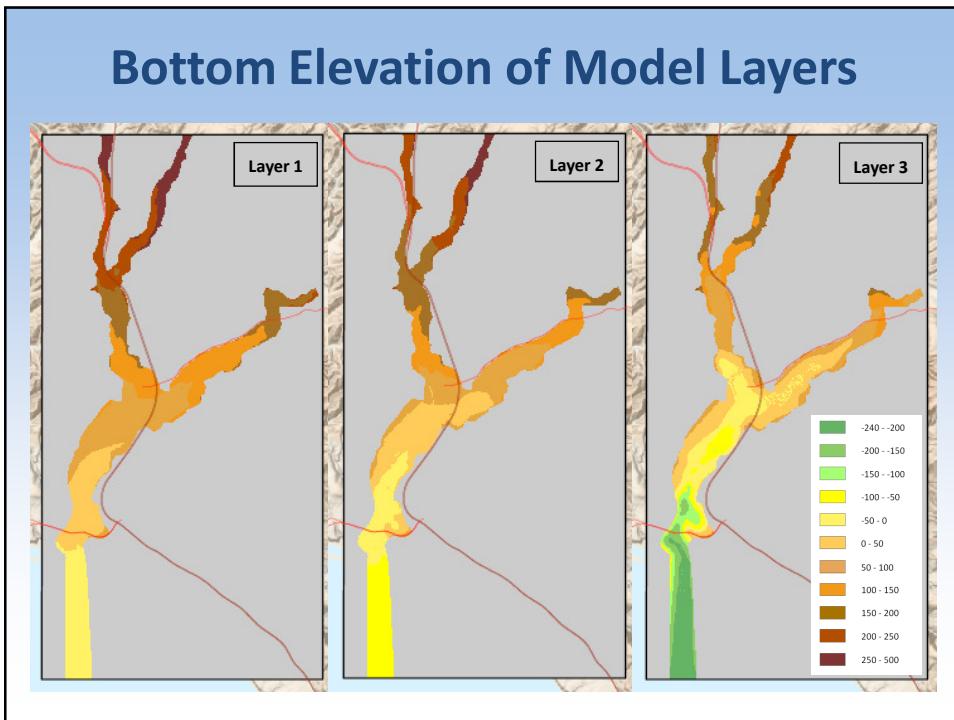
- **Groundwater Model Development and Construction**
- **Groundwater Model Calibration (Run 1)**
- Assumptions Used for Maximum Local Yield Run (Run 2)
- Updated Groundwater Modeling Schedule

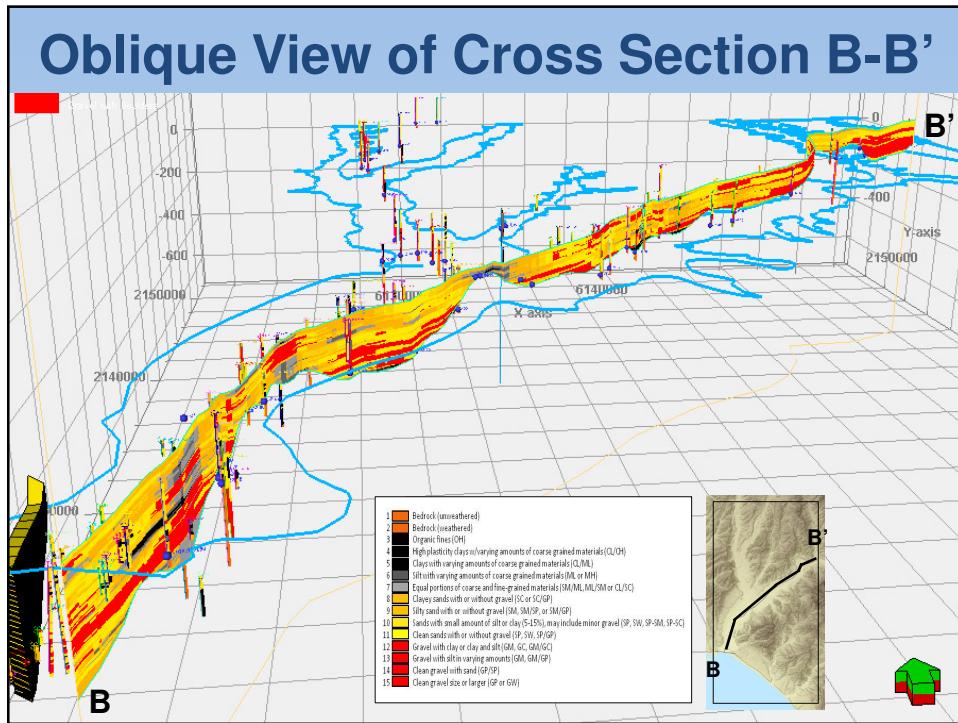
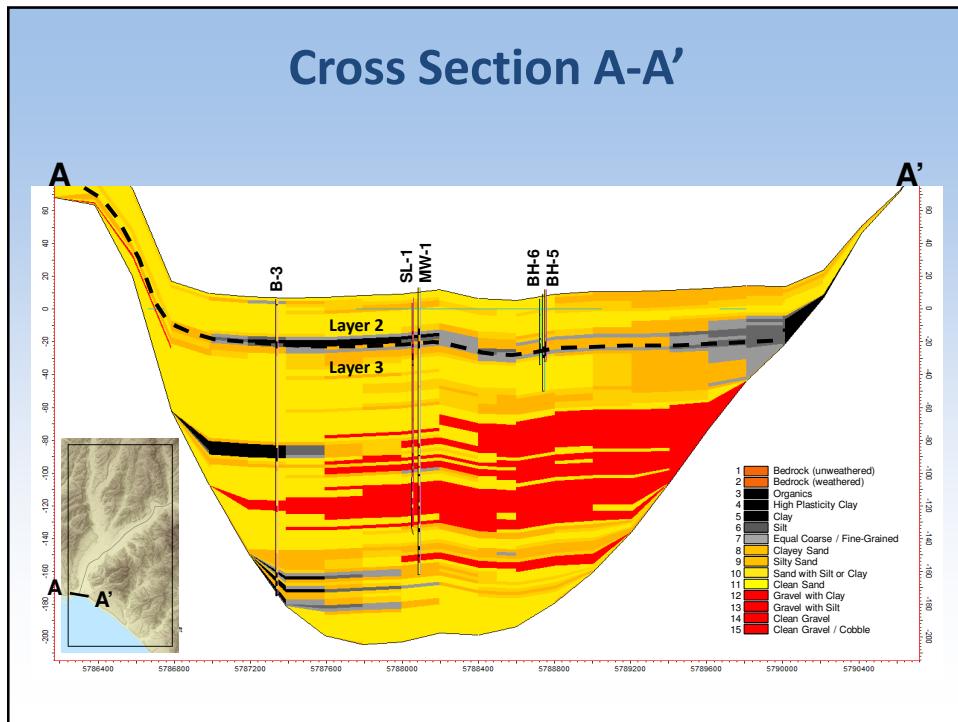
## Model Grid

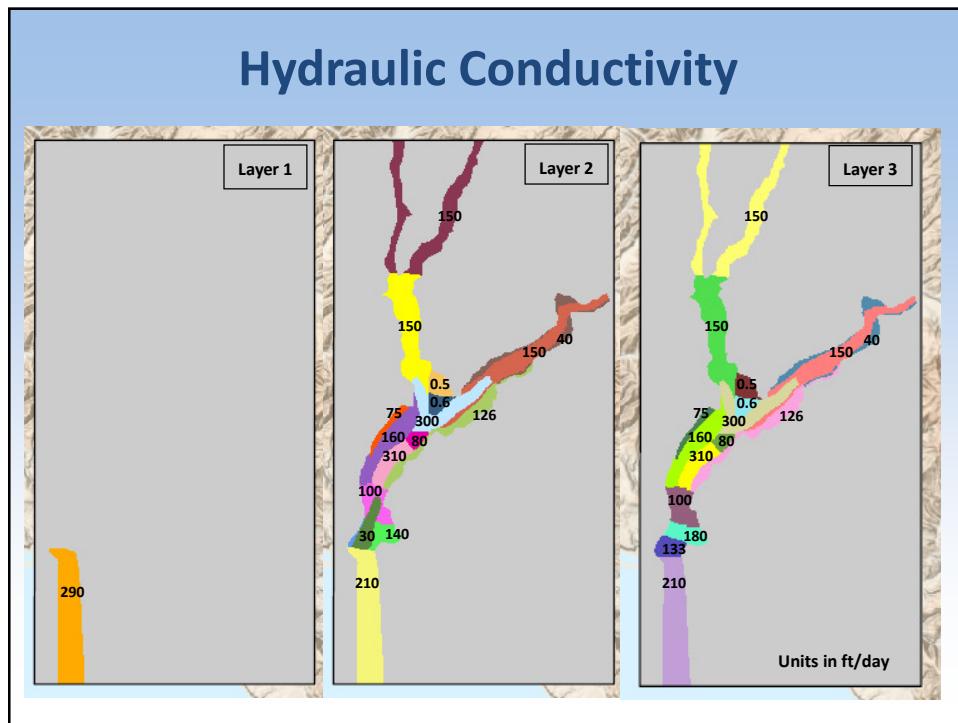
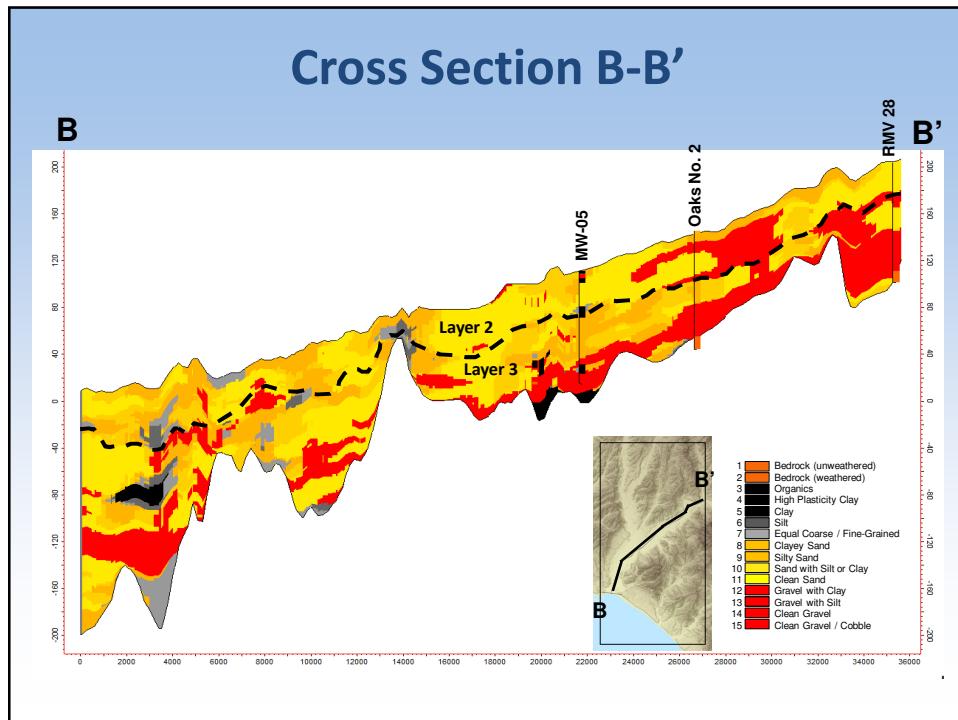


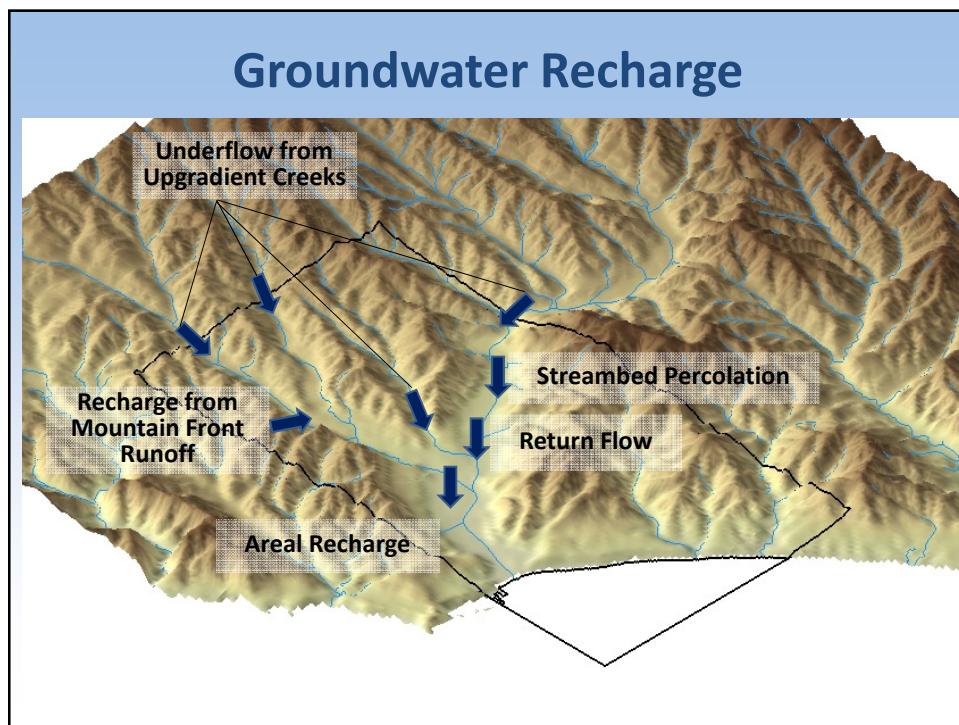
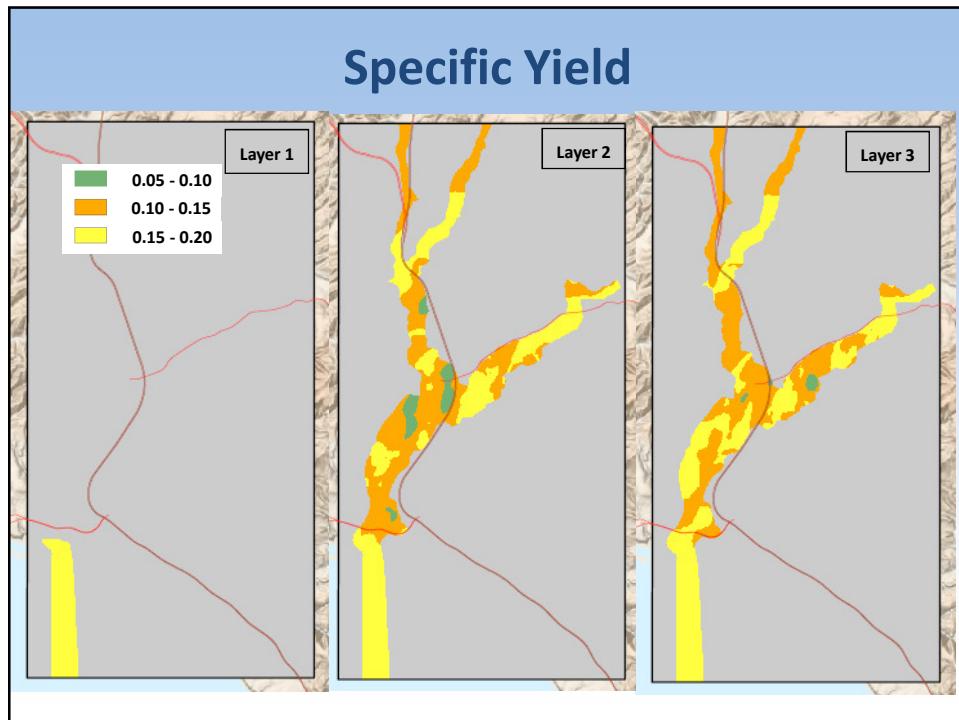
**Groundwater Model**  
1,012 x 524 Cells/Layer  
X 3 layers  
(1,590,864 cells in total)

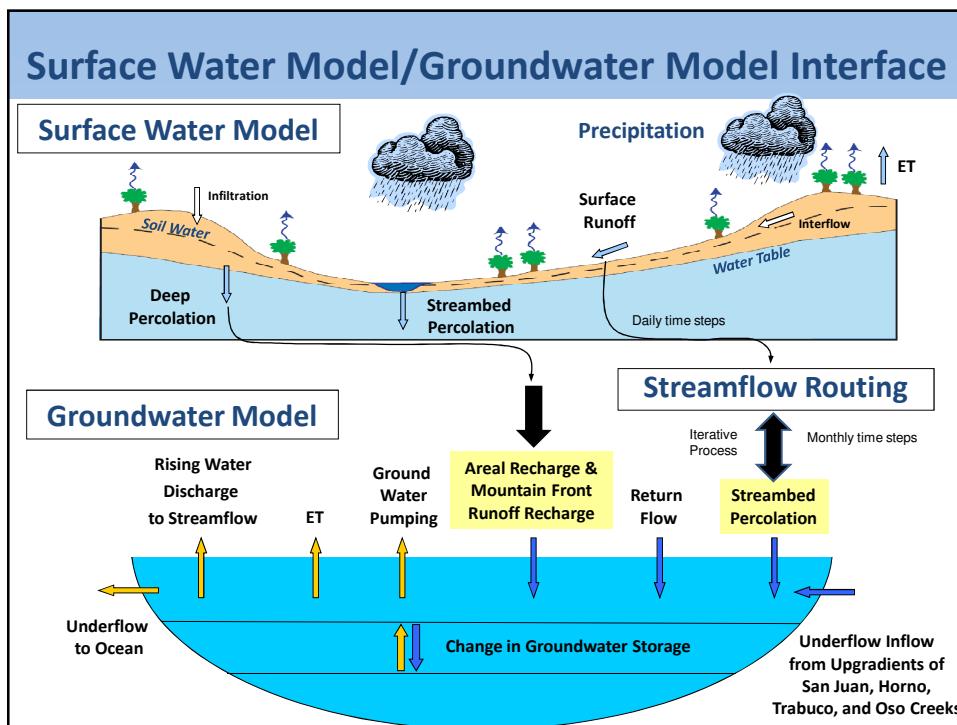
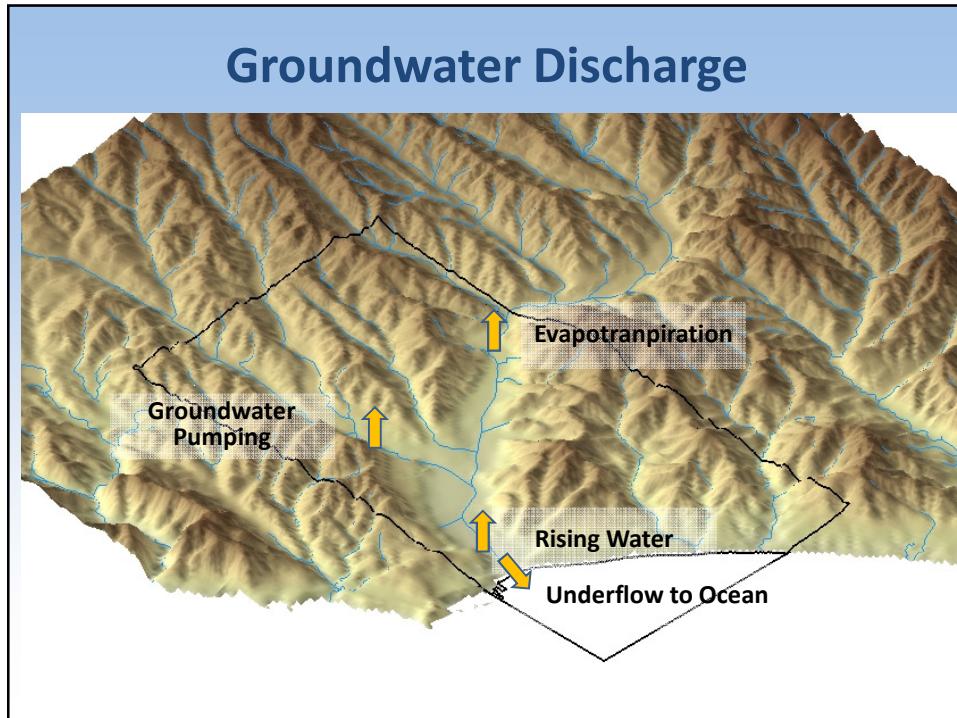


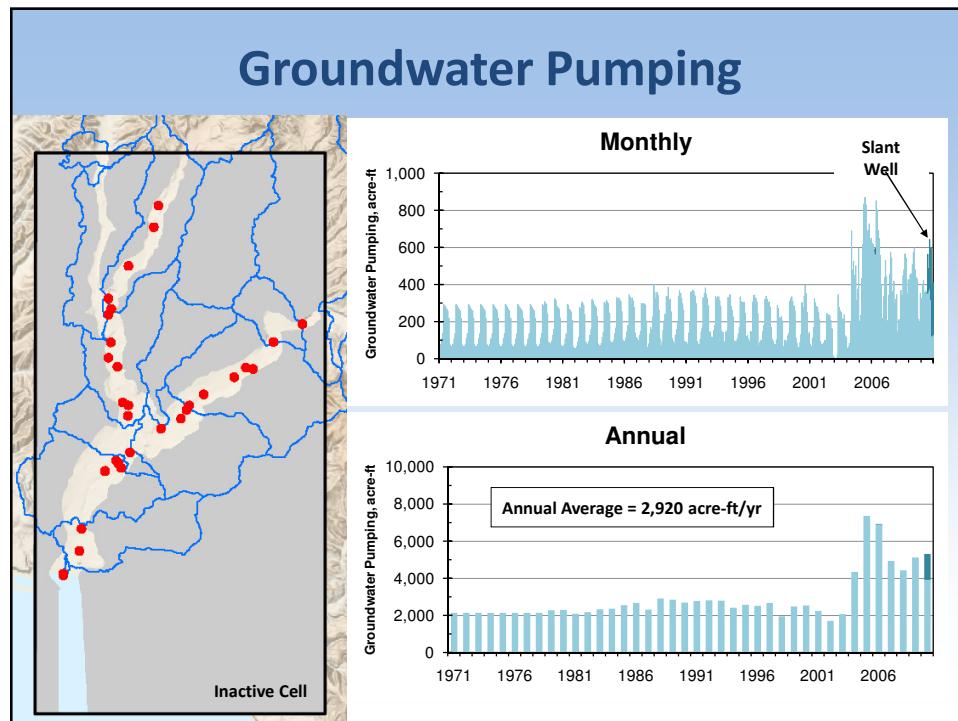
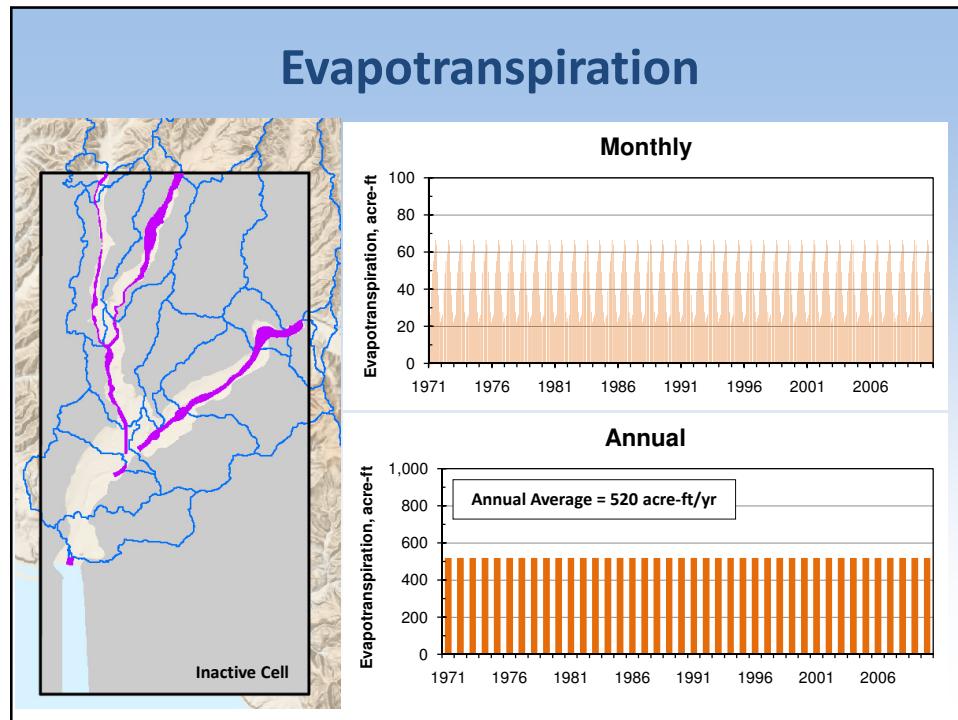


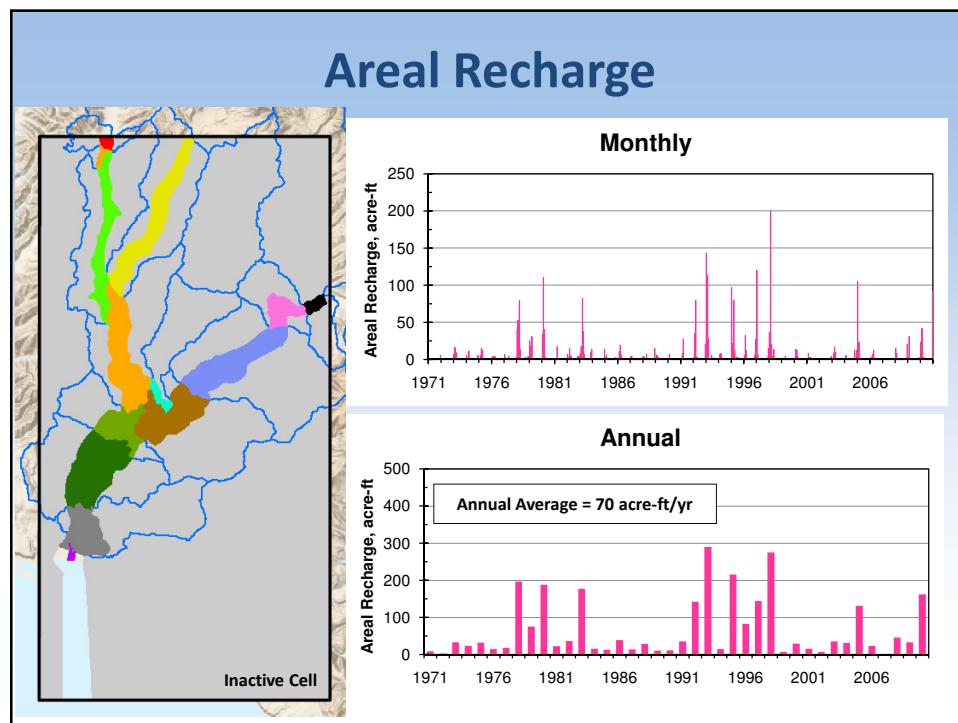
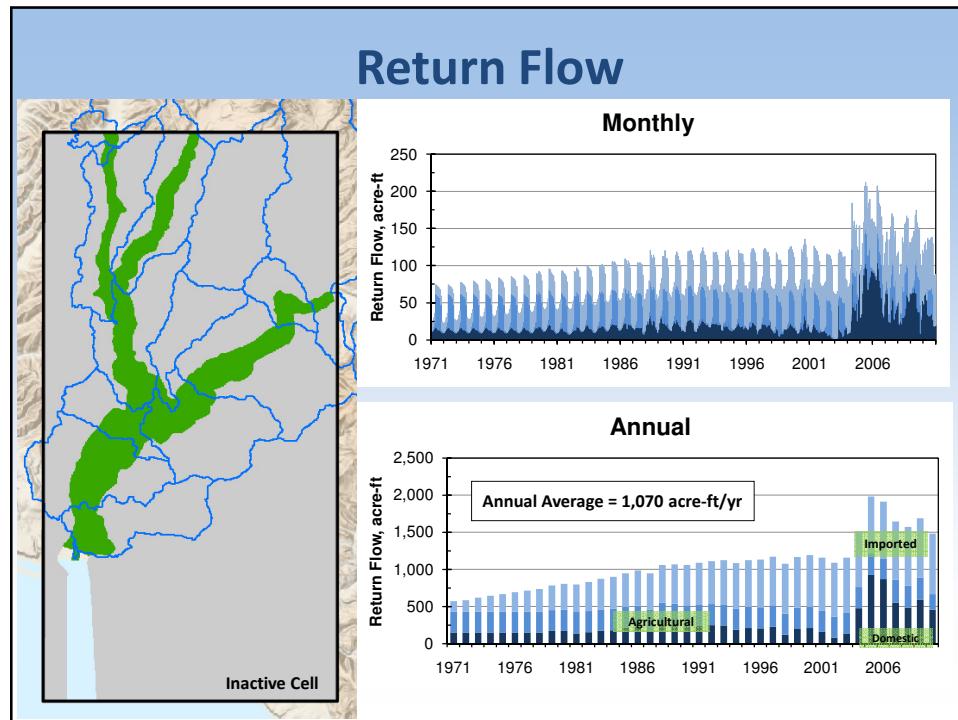


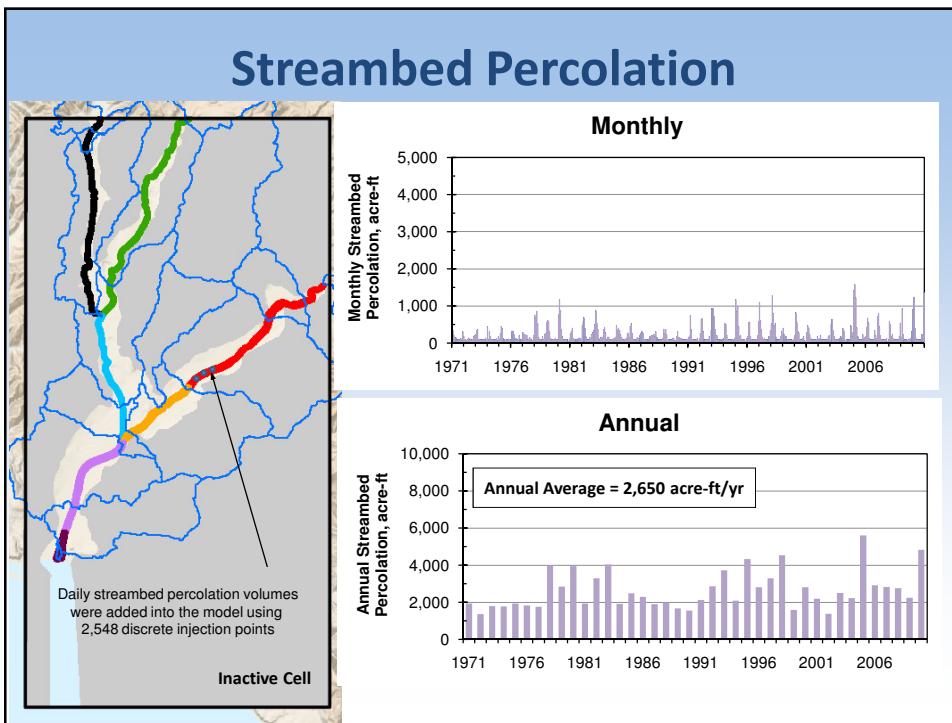
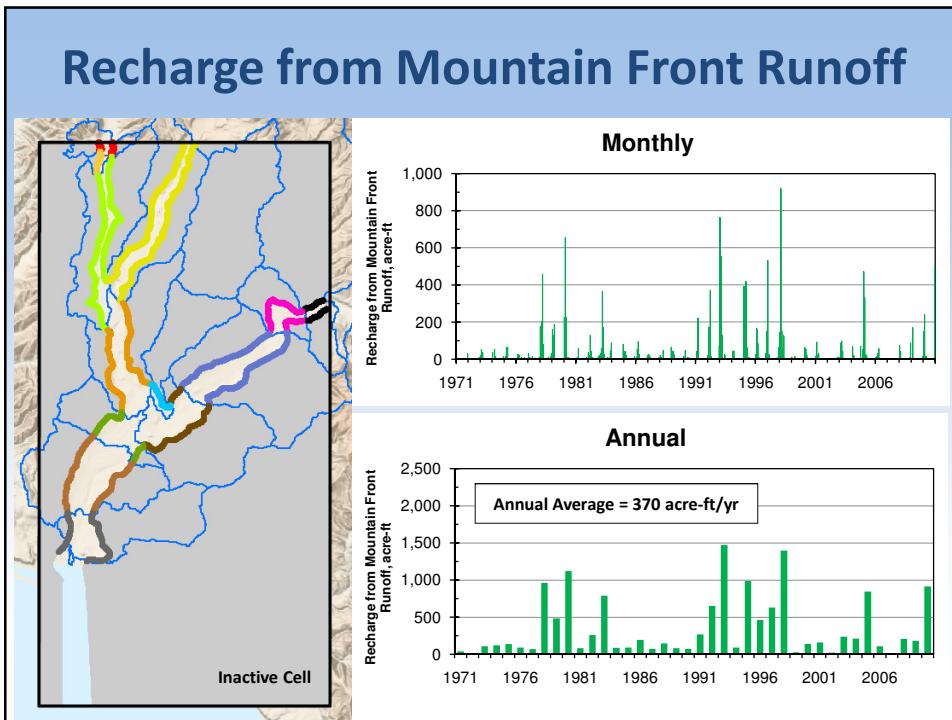


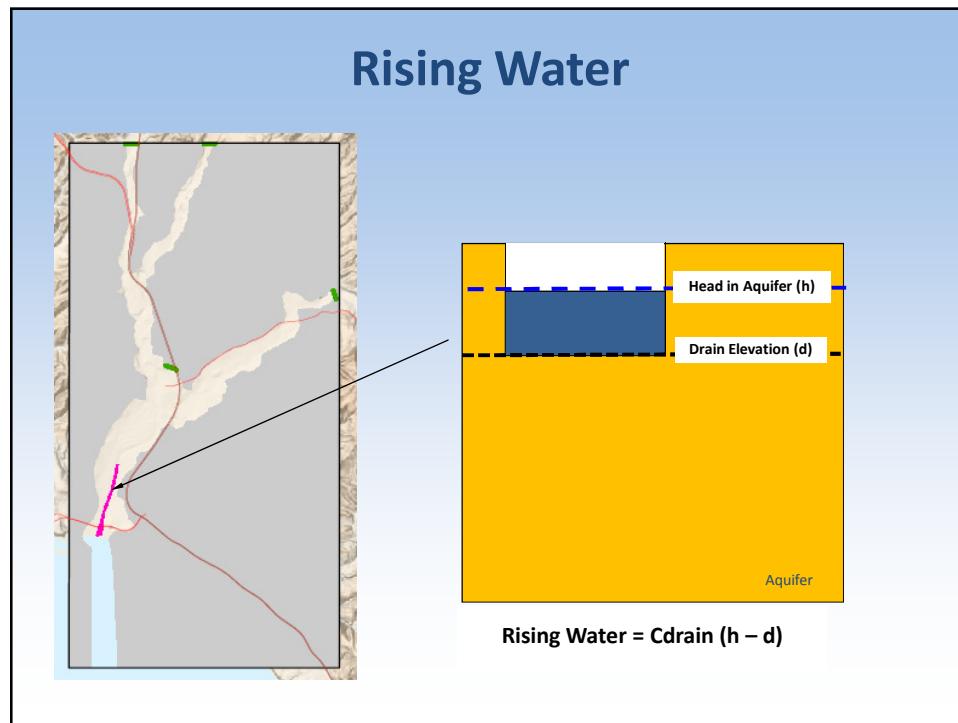
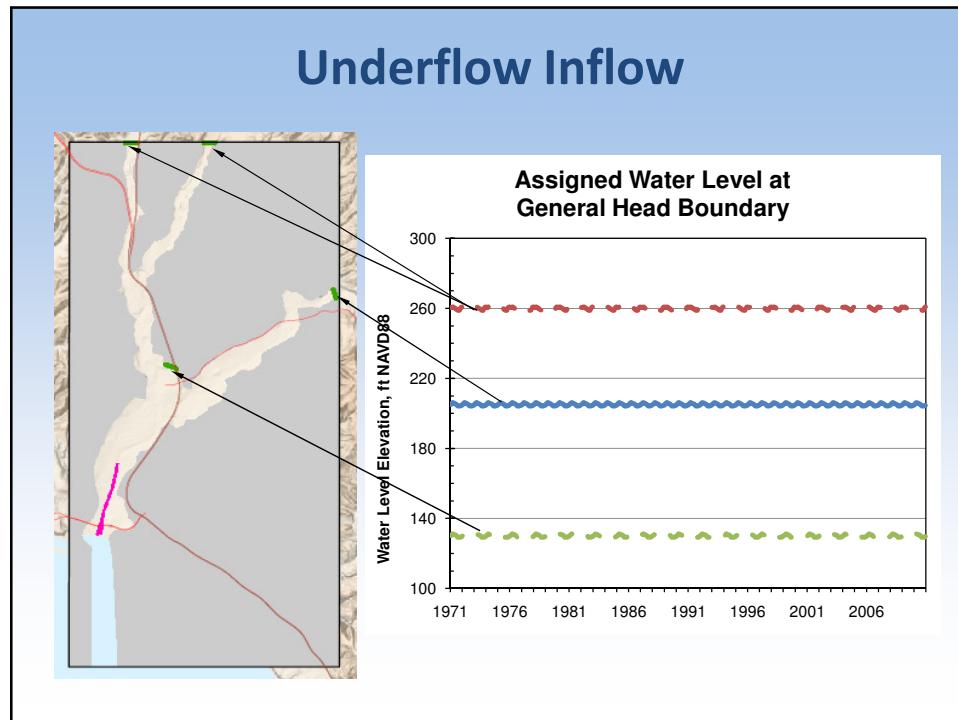








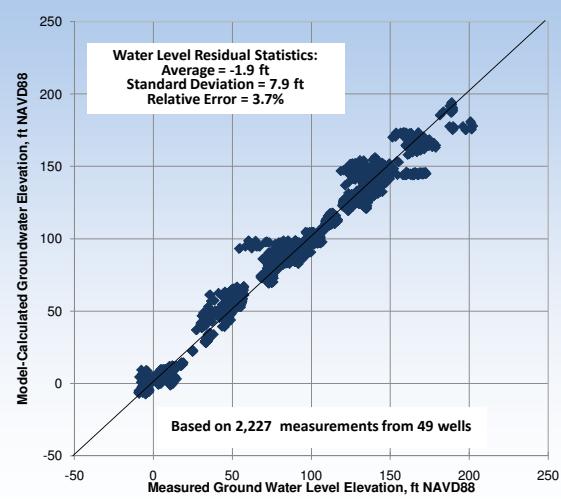
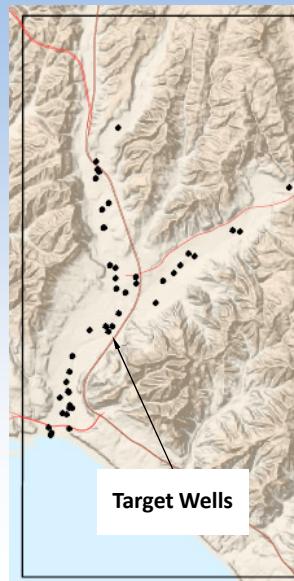


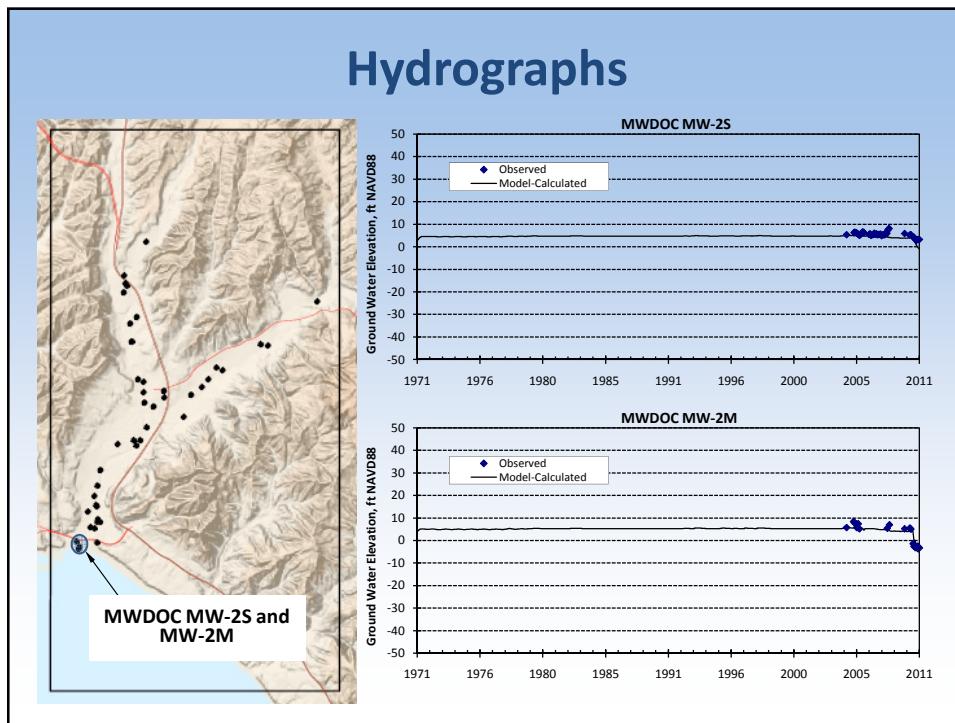
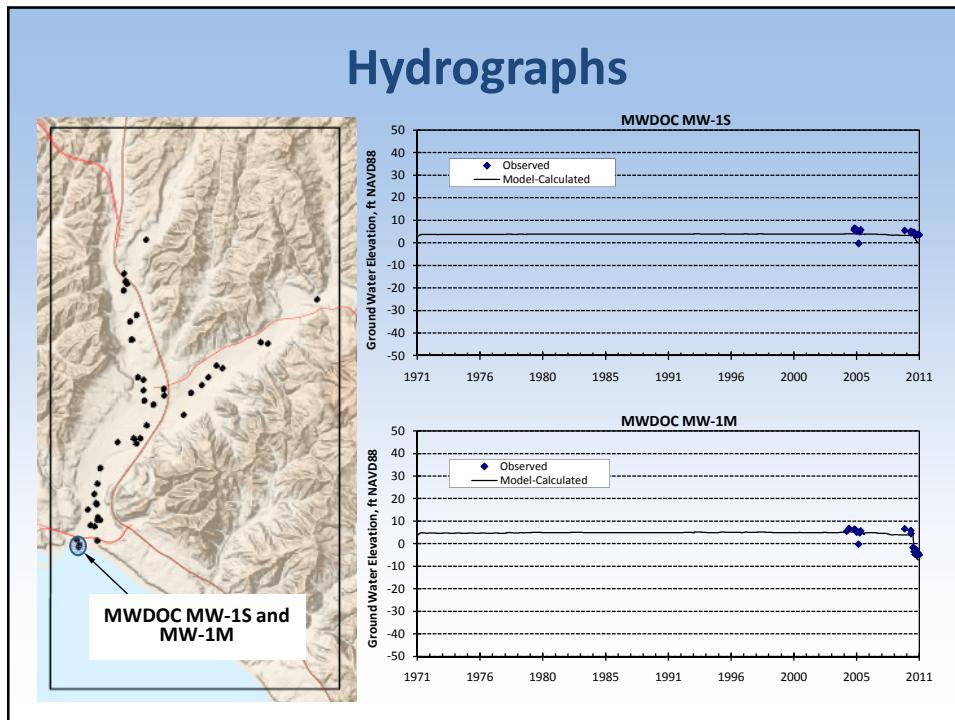


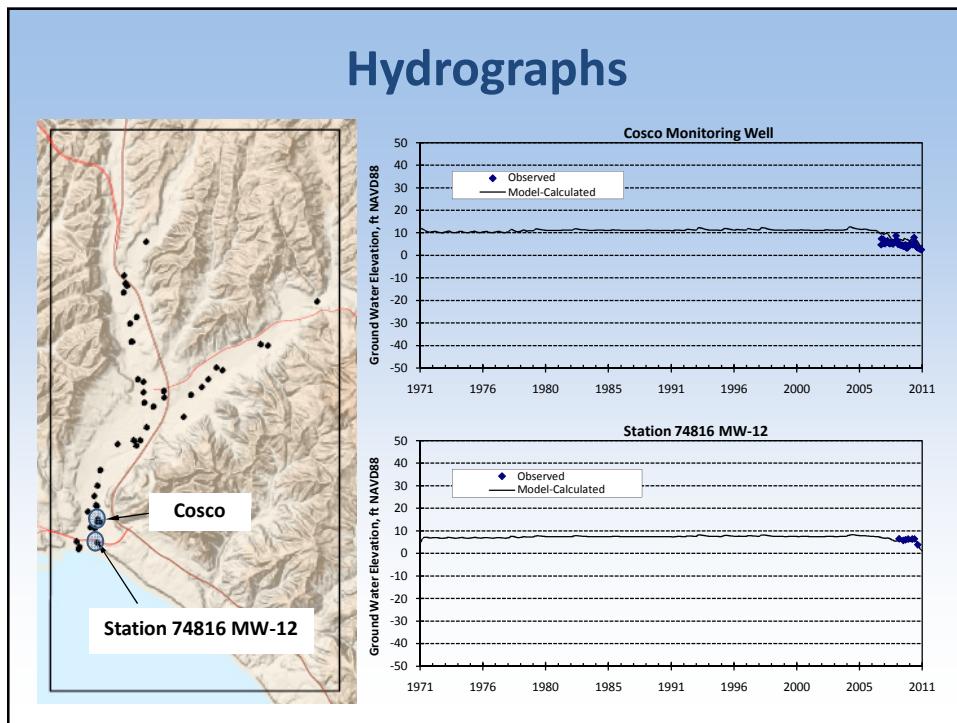
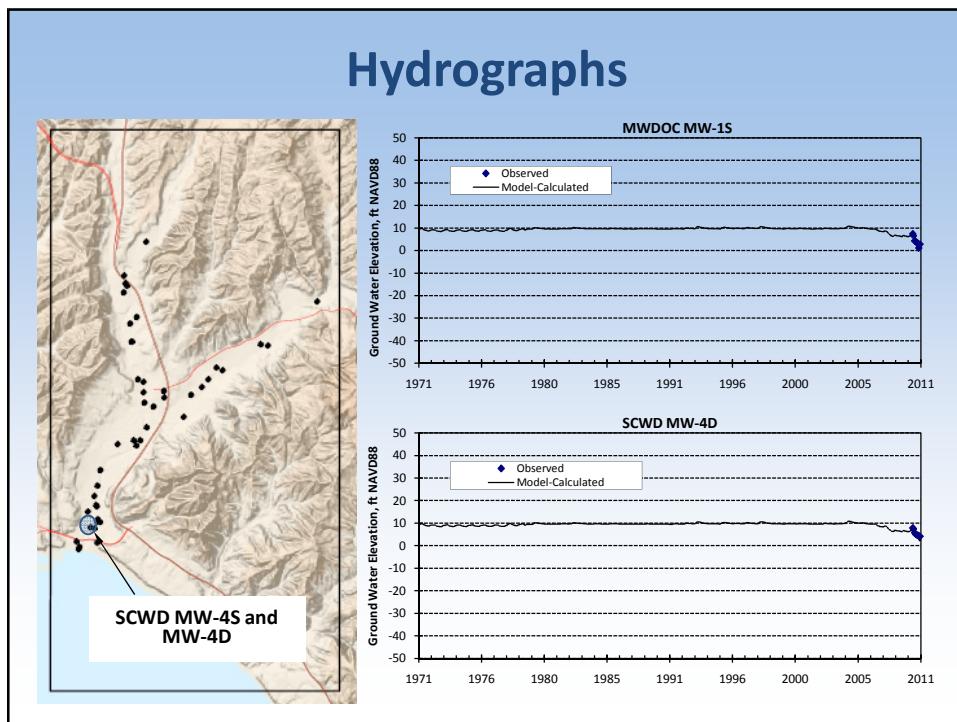
## Overview

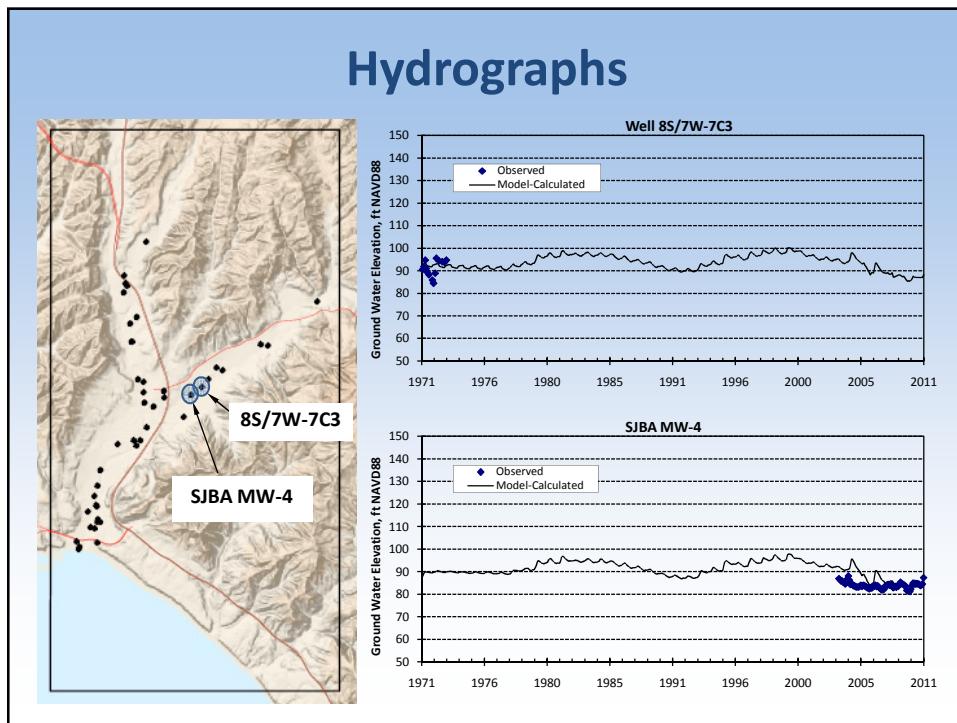
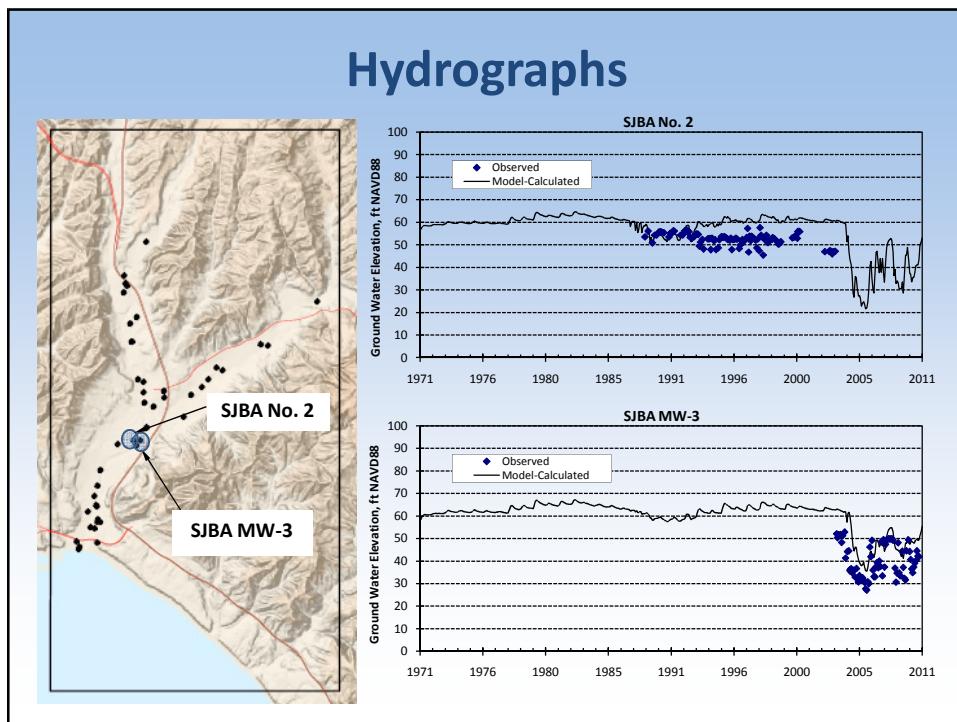
- **Groundwater Model Development and Construction**
- **Groundwater Model Calibration (Run 1)**
- Assumptions Used for Maximum Local Yield Run (Run 2)
- Updated Groundwater Modeling Schedule

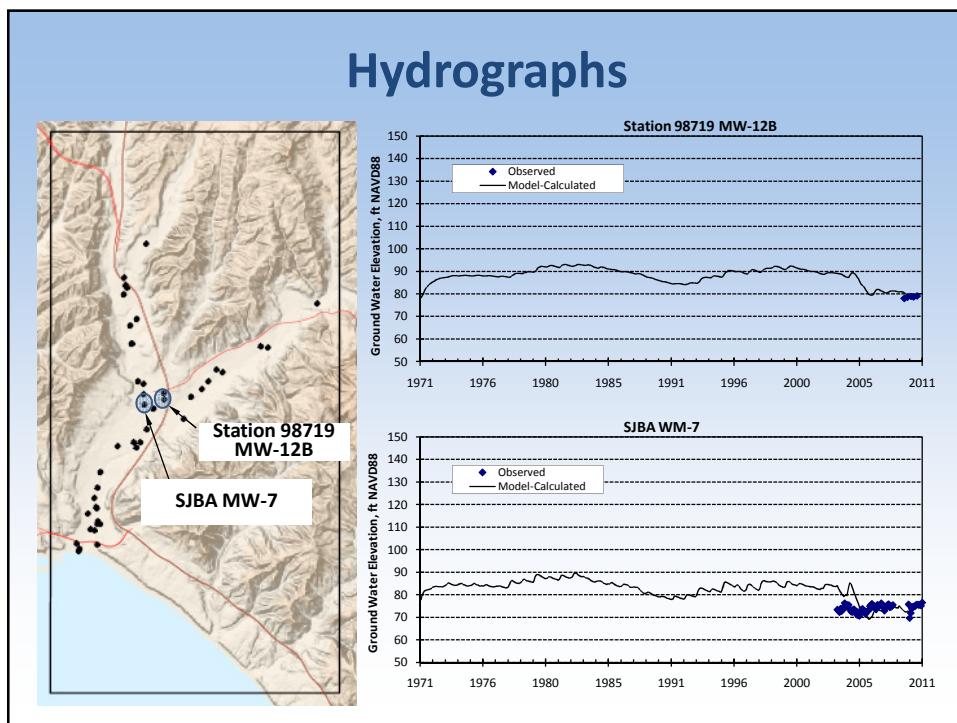
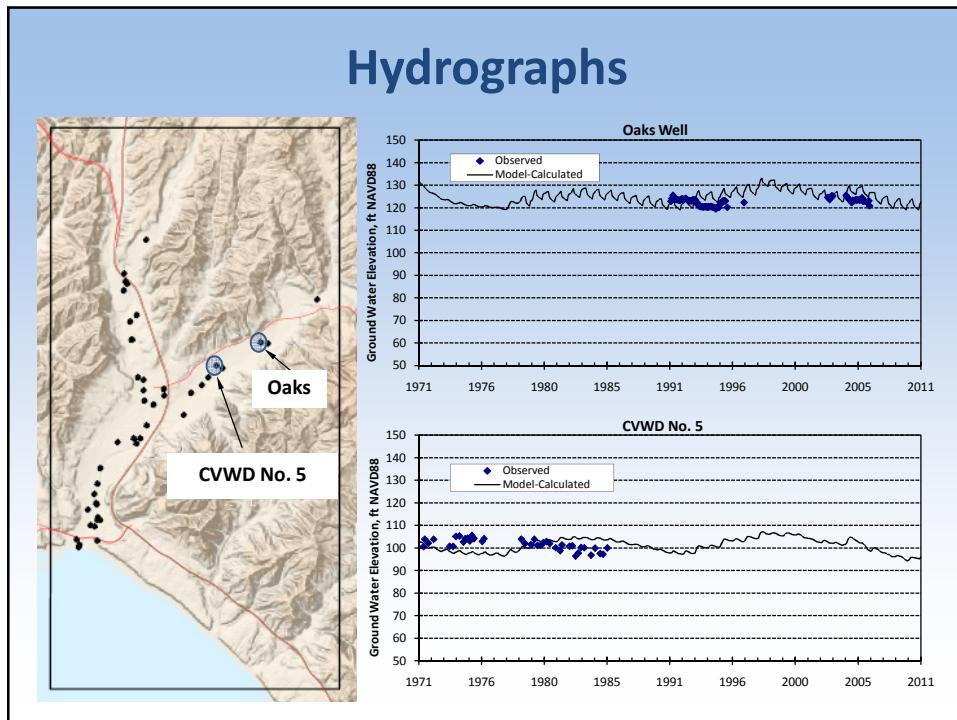
## Scatter Plot

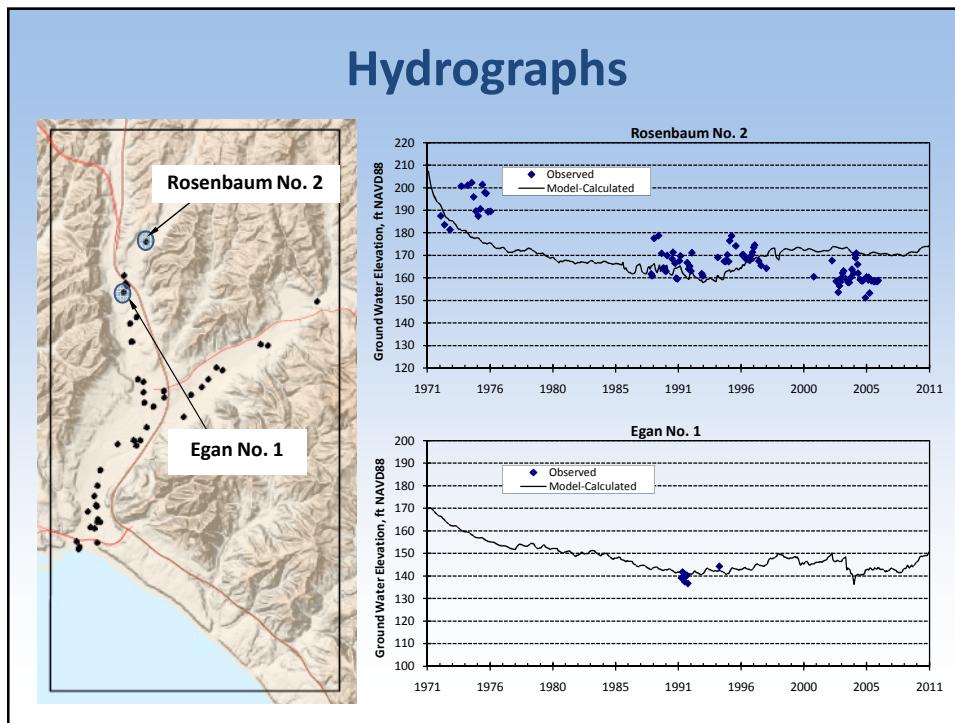
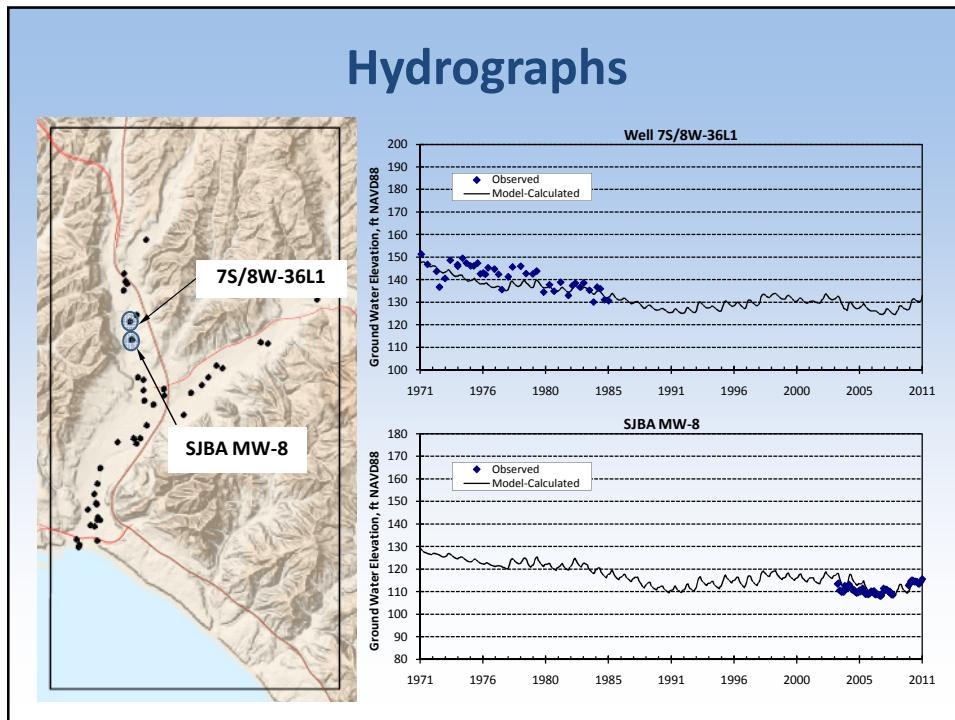




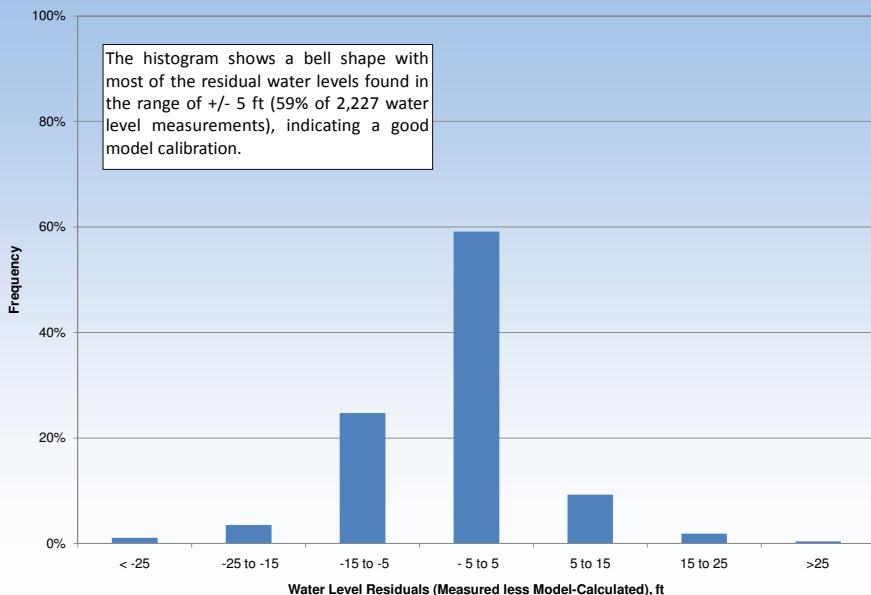




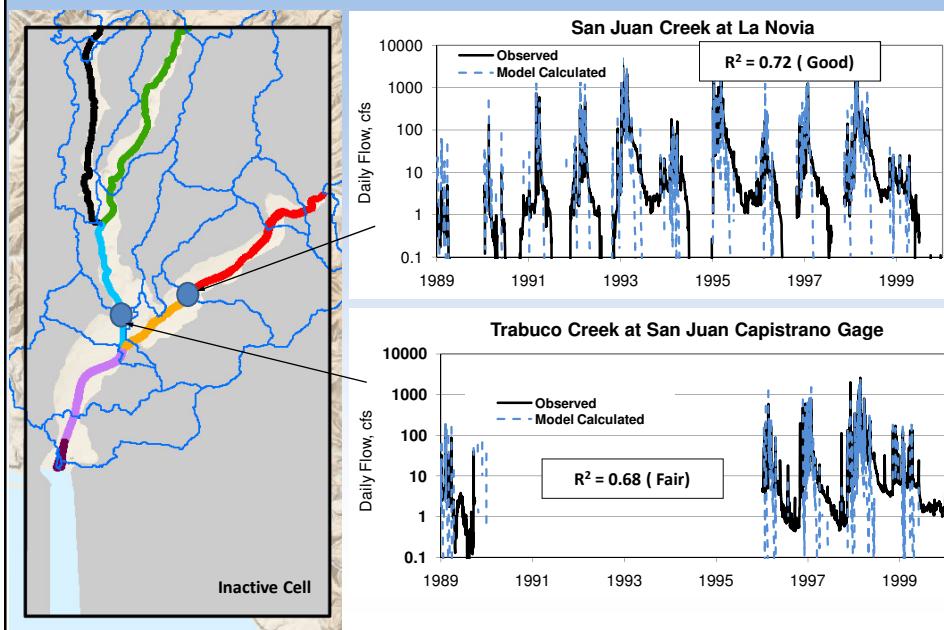


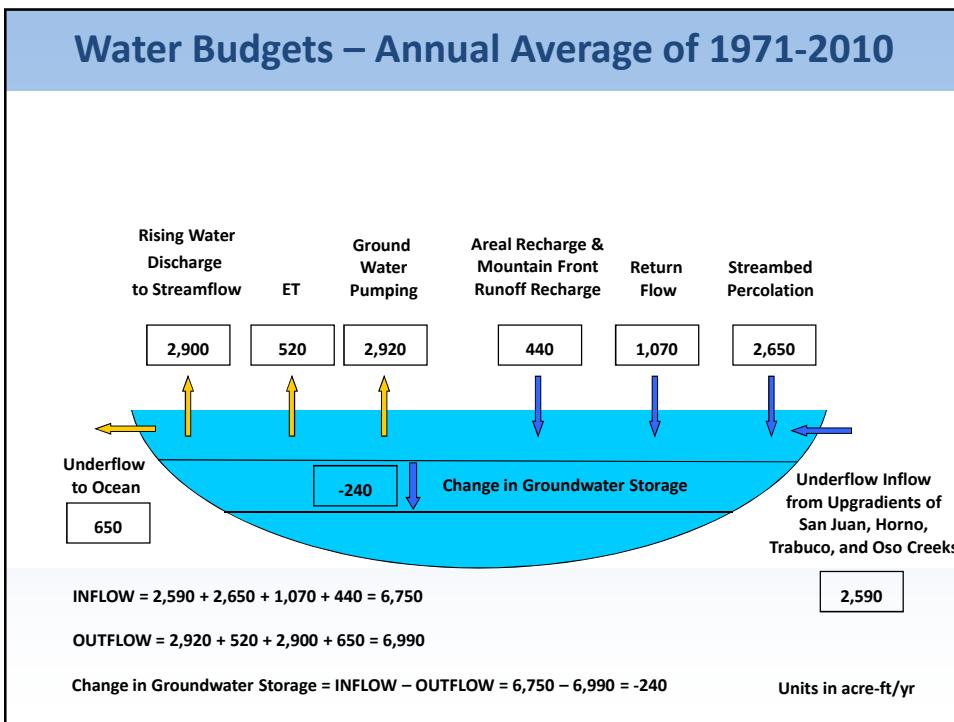


## Histogram of Water Level Residuals



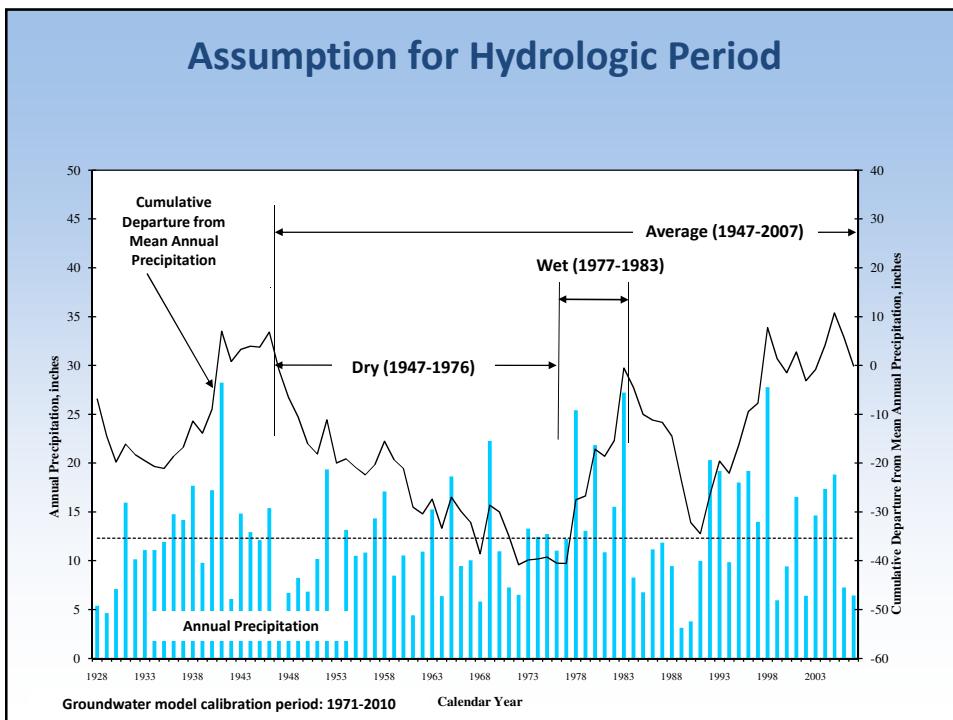
## Streamflow Calibration





## Overview

- **Groundwater Model Development and Construction**
- **Groundwater Model Calibration (Run 1)**
- **Assumptions Used for Maximum Local Yield Run (Run 2)**
- **Updated Groundwater Modeling Schedule**



### Assumption for Groundwater Pumping

Wells		Groundwater Pumping [acre-ft/yr]
City's GWRP Wells	Kinoshita	690
	Tirador	1,105
	SJBA No. 4	1,381
	SJBA No. 2	690
	CVWD No. 1	1,381
	Dance Hall	1,243
	Eastern Well-So Cooks	1,105
	Eastern Well-WS#5	1,105
	So Well-Rosan Ranch #2	1,105
	So Well-Rosan Ranch #1	1,105
<b>Subtotal</b>		<b>10,907</b>
City's Other Wells	Rosenbaum No. 1	555
	North Open Space	446
	Hollywood 2A	329
	Mission St.	0
	<b>Subtotal</b>	<b>1,330</b>
SCWD	Stonehill	1,000
	New No. 2	1,000
	<b>Subtotal</b>	<b>2,000</b>
Private Wells		1,250
<b>Total</b>		<b>15,487</b>



## Assumptions Used to Assess Sustainability

Constraint	Run 2a	Run 2b
<b>Pumping Wells</b>	Use existing wells and anticipated new vertical wells.	Change existing wells to radial wells with much lower, horizontal laterals that would allow increased aquifer drawdowns.
<b>Water Level Constraint</b>	Use the USGS Drawdown-Limited Multi-Node Well Package (MNW) to adjust the pumping rates so that groundwater levels are maintained above the screened interval of the well during the predictive period of the model.	
<b>Water Quality Constraint</b>	When the model-predicted TDS concentrations at the selected key monitoring well exceeds a threshold (i.e. TDS at 2,600 mg/L in SCWD MW-4), the pumping from SCWD and CSJC wells will be reduced proportionately	

## Overview

- **Groundwater Model Development and Construction**
- **Groundwater Model Calibration (Run 1)**
- **Assumptions Used for Maximum Local Yield Run (Run 2)**
- **Updated Groundwater Modeling Schedule**



## Updated Project Schedule

Task	General Date
1. Complete Draft Surface Water Report (PACE)	October 14, 2011
2. Model Advisory Committee input to revised Technical Approach for Surface Modeling	November 9, 2011
3. Complete Surface Water/Groundwater Model Interface (HSPF)	January 2012
4. Technical Review of Updated Surface Water Modeling HSPF (MAC)	January 2012
5. Technical Review of Surface Water/Groundwater Modeling (TAC)	Mid February 2012
6. Complete Historical and Calibration runs of the Groundwater Model	March 30, 2012
7. Technical Review of Historical Run (Run 1) (MAC)	June 19, 2012
8. Technical Review of Maximum Local Sustainable Yield Runs (Run 2) (MAC)	Late July 2012
9. Time will be needed about this point to incorporate basin management strategies from the Groundwater Management Plan	Timing Unknown